

H.A

**Notice of Allowability**

Application No.

10/762,478

Applicant(s)

DEAK, JAMES G.

Examiner

David Nhu

Art Unit

2818

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/15/05.
2. ☒ The allowed claim(s) is/are 39-67 and 73-77.
3. ☒ The drawings filed on 23 January 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☒ Certified copies of the priority documents have been received in Application No. 10/114,249.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

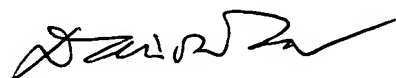
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |



### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the change and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Claim 58, "forming a pinned or reference layer" should be --forming a pinned layer--

See claims 39, 73.

### **REASONS FOR ALLOWANCE**

2. Claims 39-67, 73-77 are allowed.

3. The following is an examiner's statement of reasons for allowance: None of the references of record teaches or suggests in claims 39, 58, 63, 73: forming a pinned layer with a magnetization in a first direction supported by a substrate; forming a tunnel barrier layer adjacent the pinned layer; and forming a sense layer adjacent a side of the tunnel barrier layer opposite the pinned layer, said sense layer having a first ferromagnetic layer and a second ferromagnetic layer mutually separated by a conductive spacer layer and a characteristic which results in array field coupling and antiferromagnetic exchange coupling between said first and second ferromagnetic layers (as cited in claim 39); forming a sense layer, said sense layer having a first ferromagnetic layer and a second ferromagnetic layer mutually separated by a conductive spacer layer and a characteristic which results in array field coupling and antiferromagnetic exchange coupling between said first and second ferromagnetic layers across said conductive spacer layer; forming a tunnel barrier layer adjacent the sense layer;

and forming a pinned layer with a magnetization in a first direction adjacent a side of said tunnel barrier opposite sense layer ( as cited in claim 58); forming a first magnetization layer over the tunnel barrier layer; smoothing the first magnetization layer; forming a spacer layer over the first magnetization layer; forming a second magnetization layer over of the spacer; said first and second magnetization layers and spacer layer being formed such that said layers are stray field coupled and antiferromagnetic exchange couple across said spacer layer; said first and second magnetization layers being formed such that said first layer has a magnetic saturation times said first layer's thickness not equal to said second layer's magnetic saturation times said second layer thickness ( as cited in claim 63); forming a pinned layer with a magnetization in a first direction over a substrate; forming a conductive layer adjacent the pinned layer for creating a giant magnetoresistance effect; and forming a sense layer on a side of the conductive layer opposite the pinned layer, said sense layer having a first and second ferromagnetic layers mutually separated by a conductive soacer layer and a characteristic which results in stray field coupling and antiferromagnetic exchange coupling between said first and second ferromagnetic layers (as cited in claim 73).

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### CONCLUSION

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Parkin (5,764,567): Magnetic Tunnel Junction Device with Nonferromagnetic Interface Layer for Improved Magnetic Field Response.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Nhu, (571)272-1792. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM.

The examiner's supervisor, David Nelms can be reached on (571)272-1787.

*The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.*

*Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.*

David Nhu



March 30, 2005



DAVID NHU  
PRIMARY